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Richard C. Auchterlonie
Signature Reg. 30,607



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Peter Bixby, John Forecast,
William O. Hultin, Sorin Faibish,
Wayne W. Duso

Serial No.: 09/834,427
Confim. No. 5914

Filed: April 13, 2001

For: MPEG DUAL-CHANNEL DECODER
DATA AND CONTROL PROTOCOLS
FOR REAL-TIME VIDEO STREAMING

Group Art Unit: 2614

Examiner: Unknown

Atty. Dkt. No.: 10830.0071.NPUS00

SUBMISSION OF FORMAL DRAWINGS

ATTN OFFICIAL DRAFTSMAN

Commissioner for Patents
Washington, D.C. 20231

Sir:

Applicants hereby submit the formal drawings (21 sheets) for the above-referenced application and request that these drawings be accepted for filing.

Respectfully submitted,

Richard C. Auchterlonie

Richard C. Auchterlonie
Reg. No. 30,607

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10-18-01

PTO/SB/21 (08-00)

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Application Number

09/834,427

Filing Date

April 13, 2001

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First Named Inventor

Peter Bixby

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Group Art Unit

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Technology Center 2600

Examiner Name

Unknown

Total Number of Pages in This Submission

23

Attorney Docket Number

10830.0071.NPUS00

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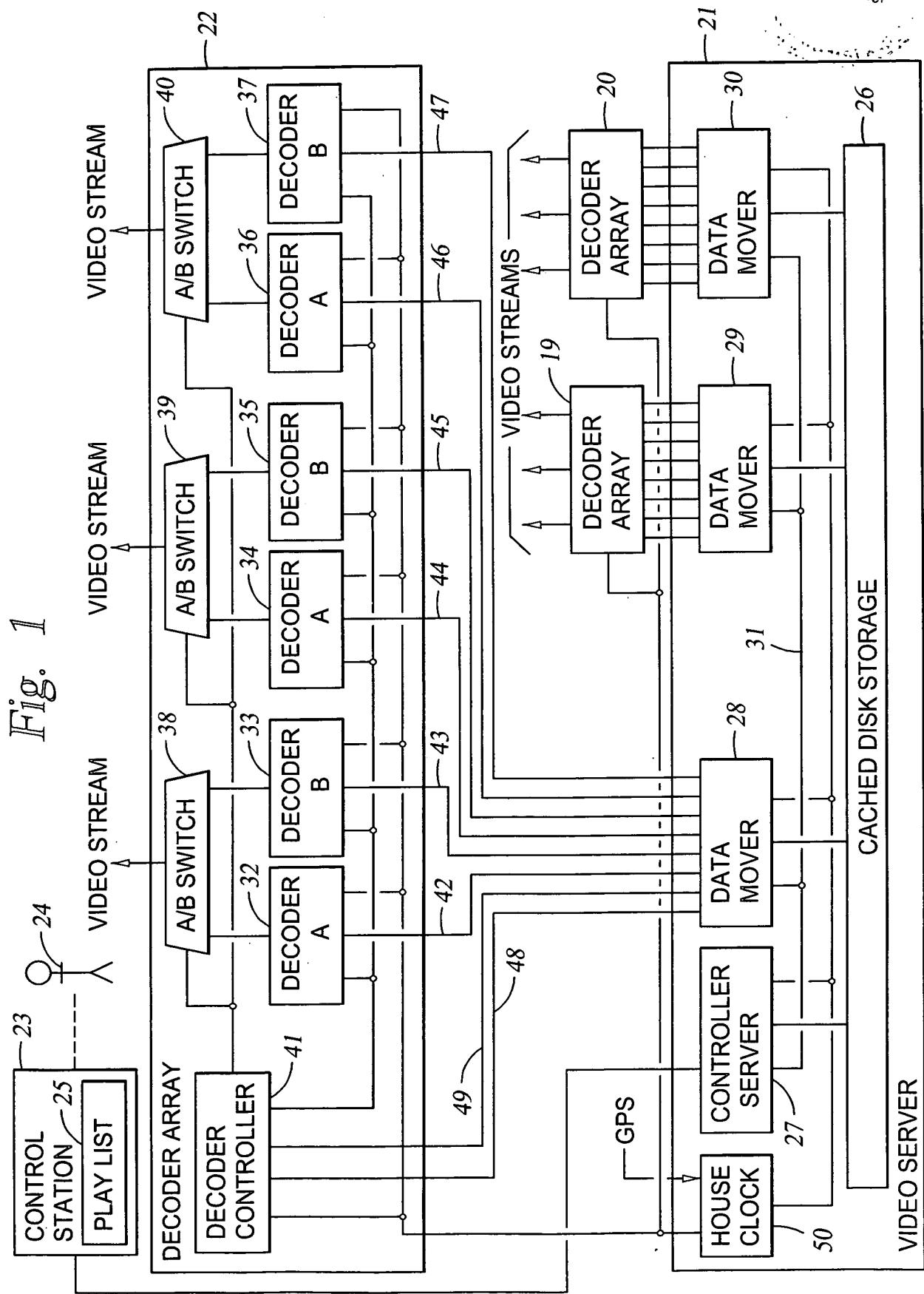
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Fig. 1



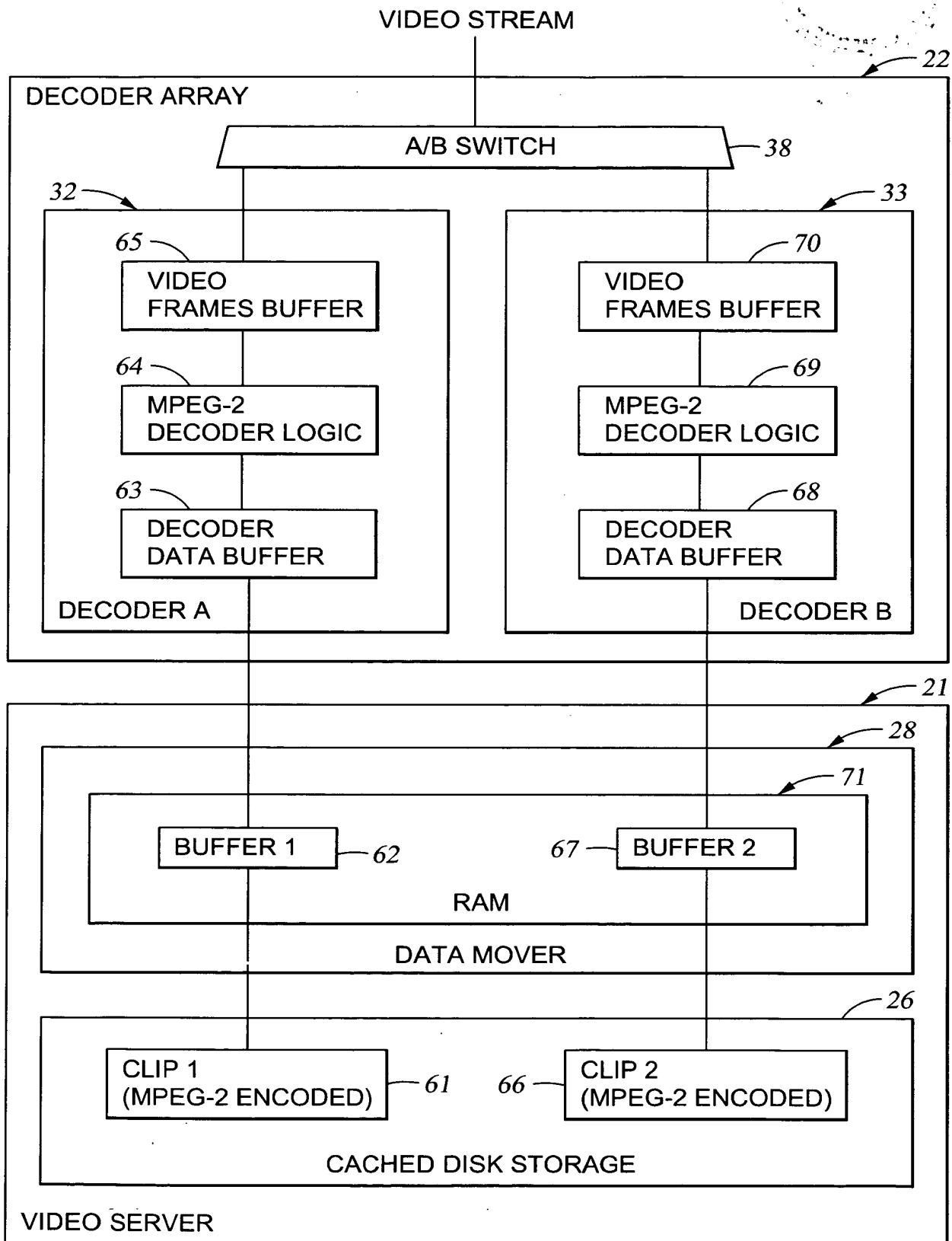


Fig. 2

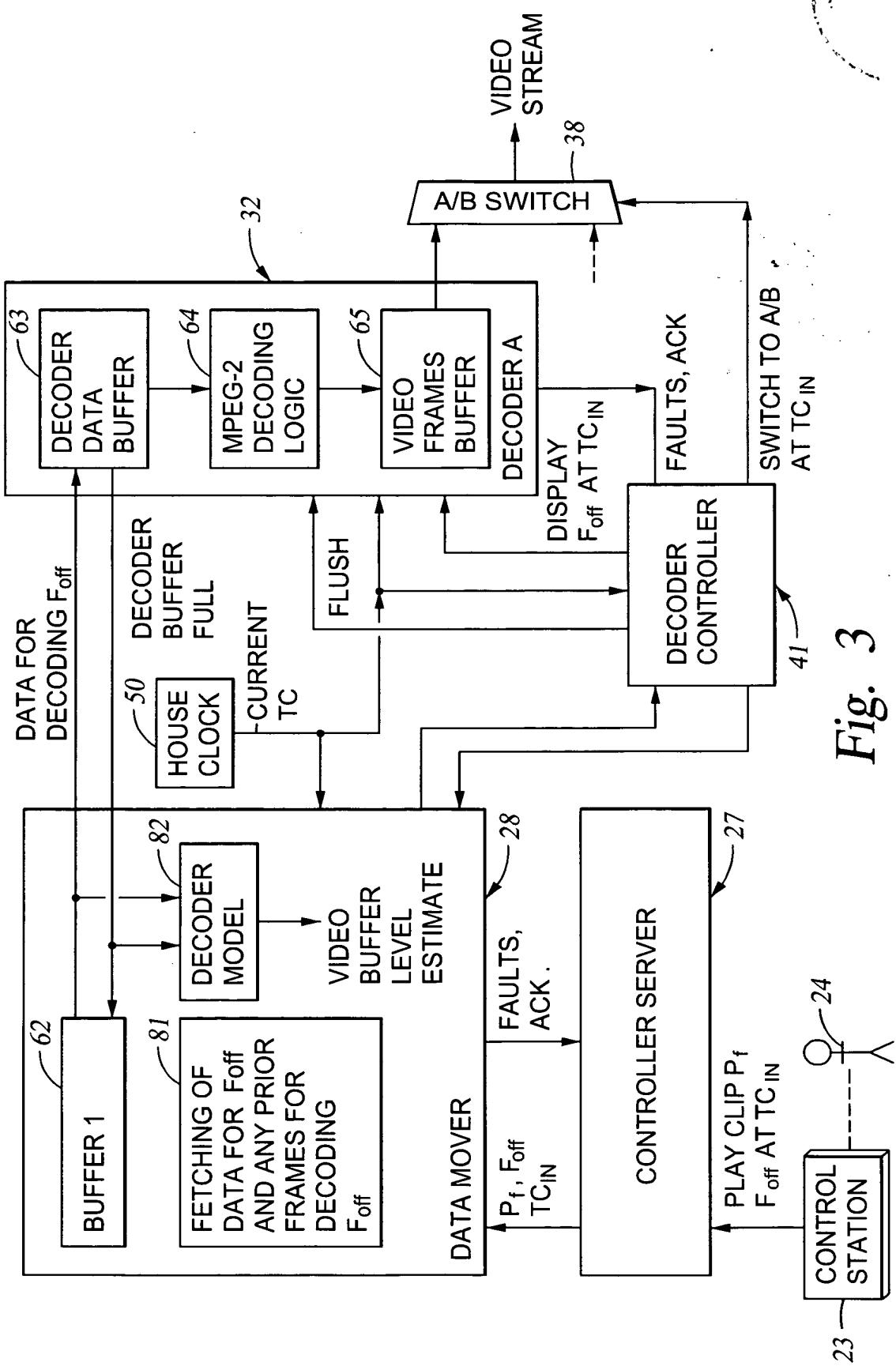
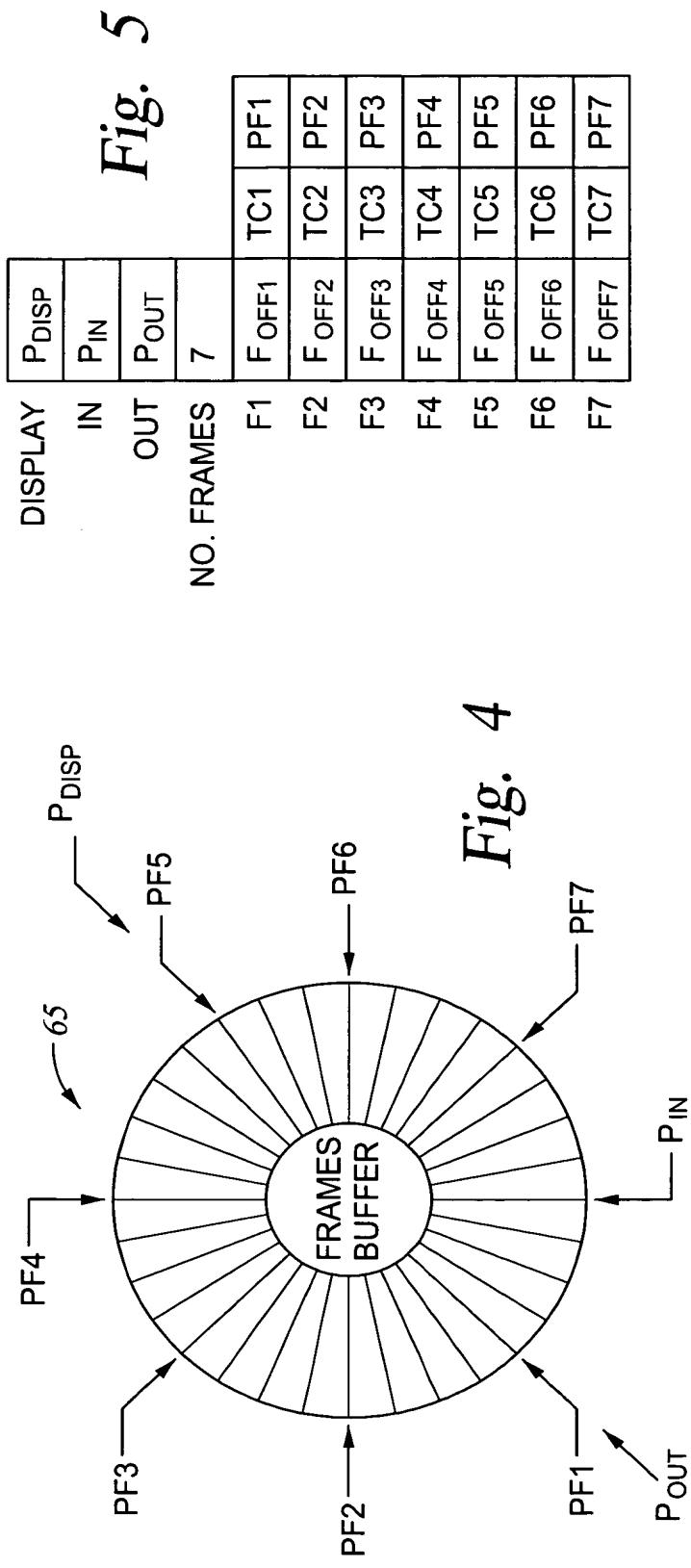
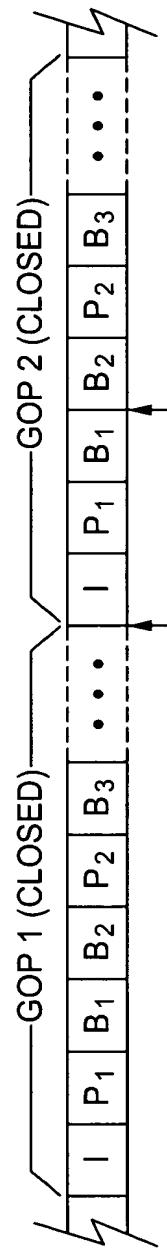
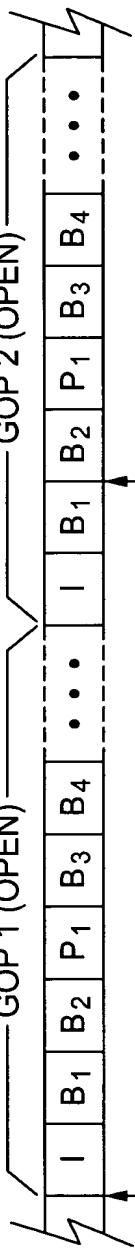


Fig. 3

**Fig. 5**

	P _{DISP}	IN	P _{IN}	OUT	P _{OUT}	NO. FRAMES
F1	F _{OFF1}	TC1	PF1			
F2	F _{OFF2}	TC2	PF2			
F3	F _{OFF3}	TC3	PF3			
F4	F _{OFF4}	TC4	PF4			
F5	F _{OFF5}	TC5	PF5			
F6	F _{OFF6}	TC6	PF6			
F7	F _{OFF7}	TC7	PF7			

Fig. 6**Fig. 7**

DECODE START

F_{OFF}

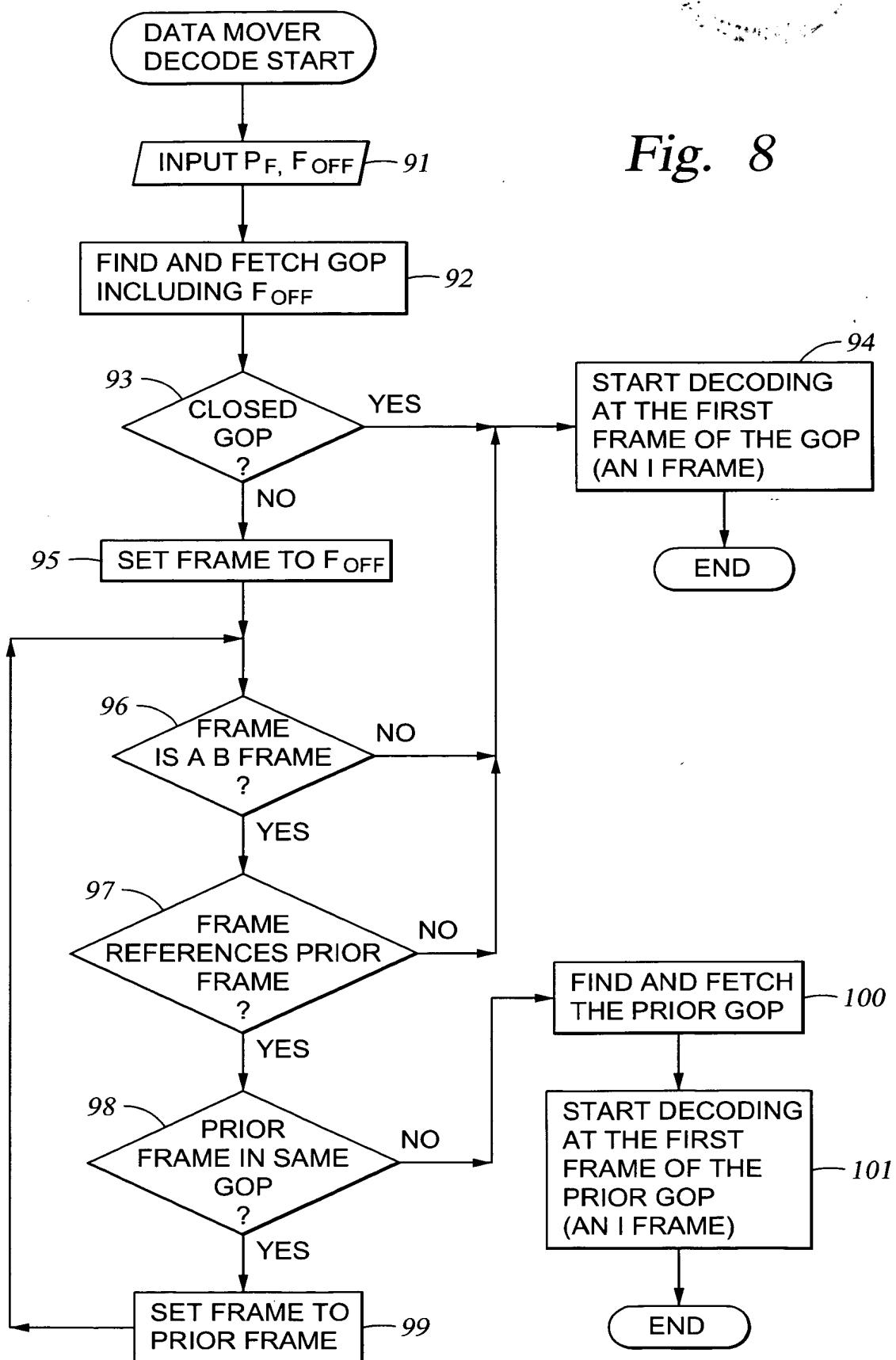
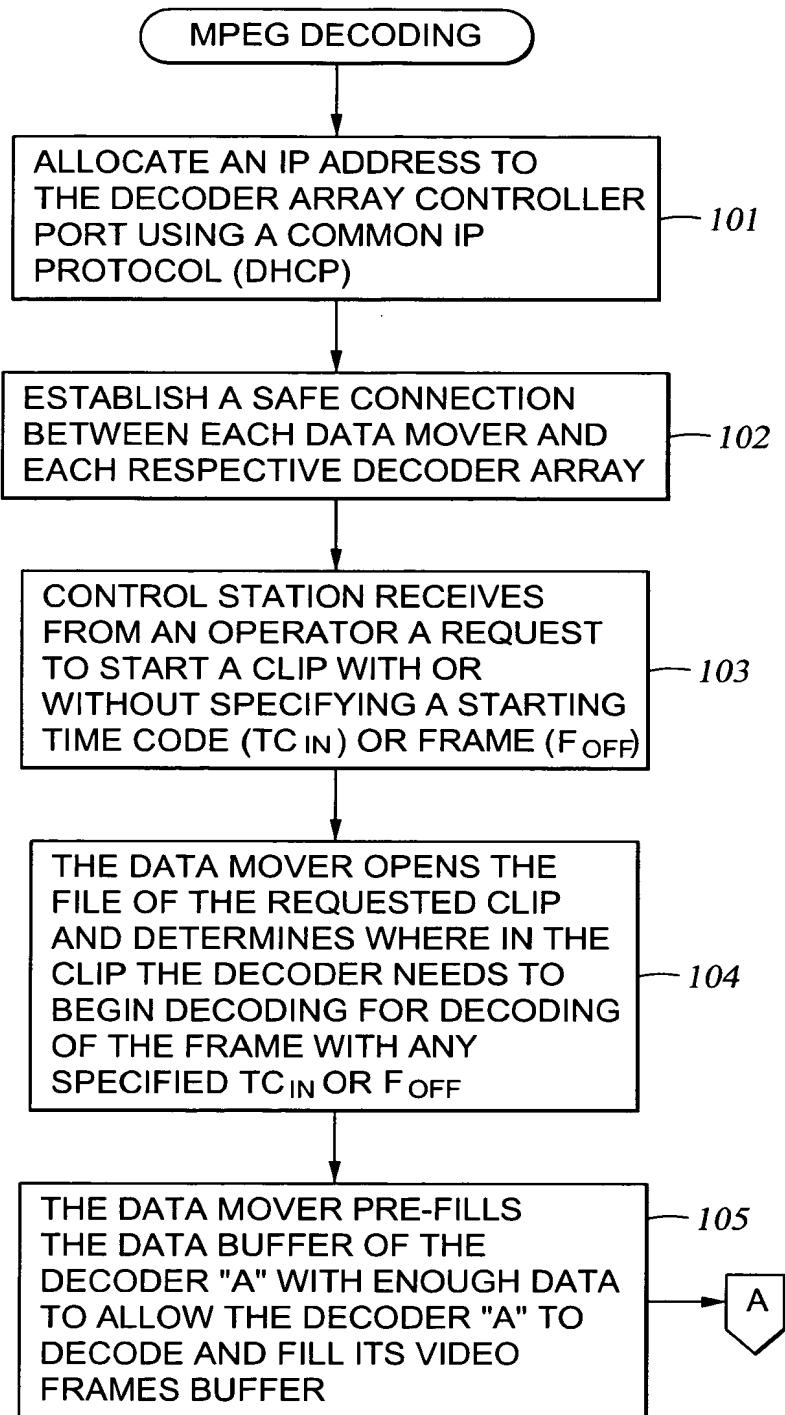


Fig. 8

*Fig. 9*

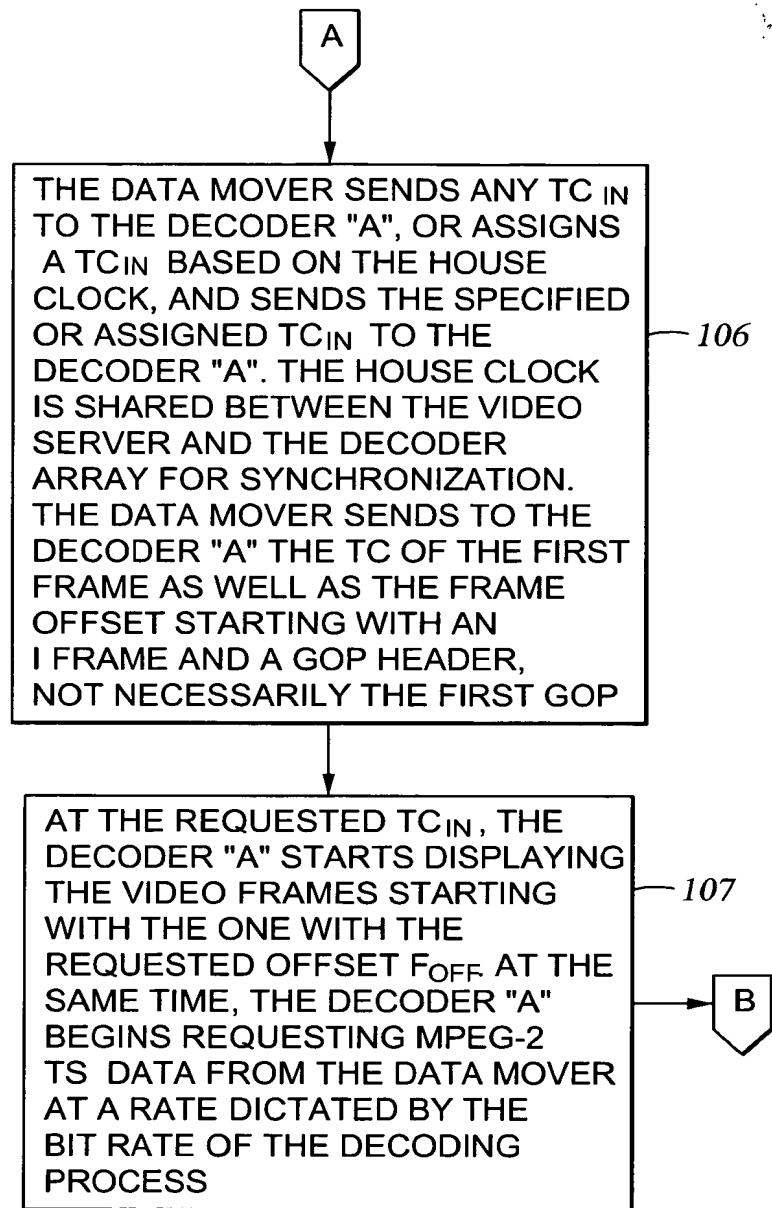


Fig. 10

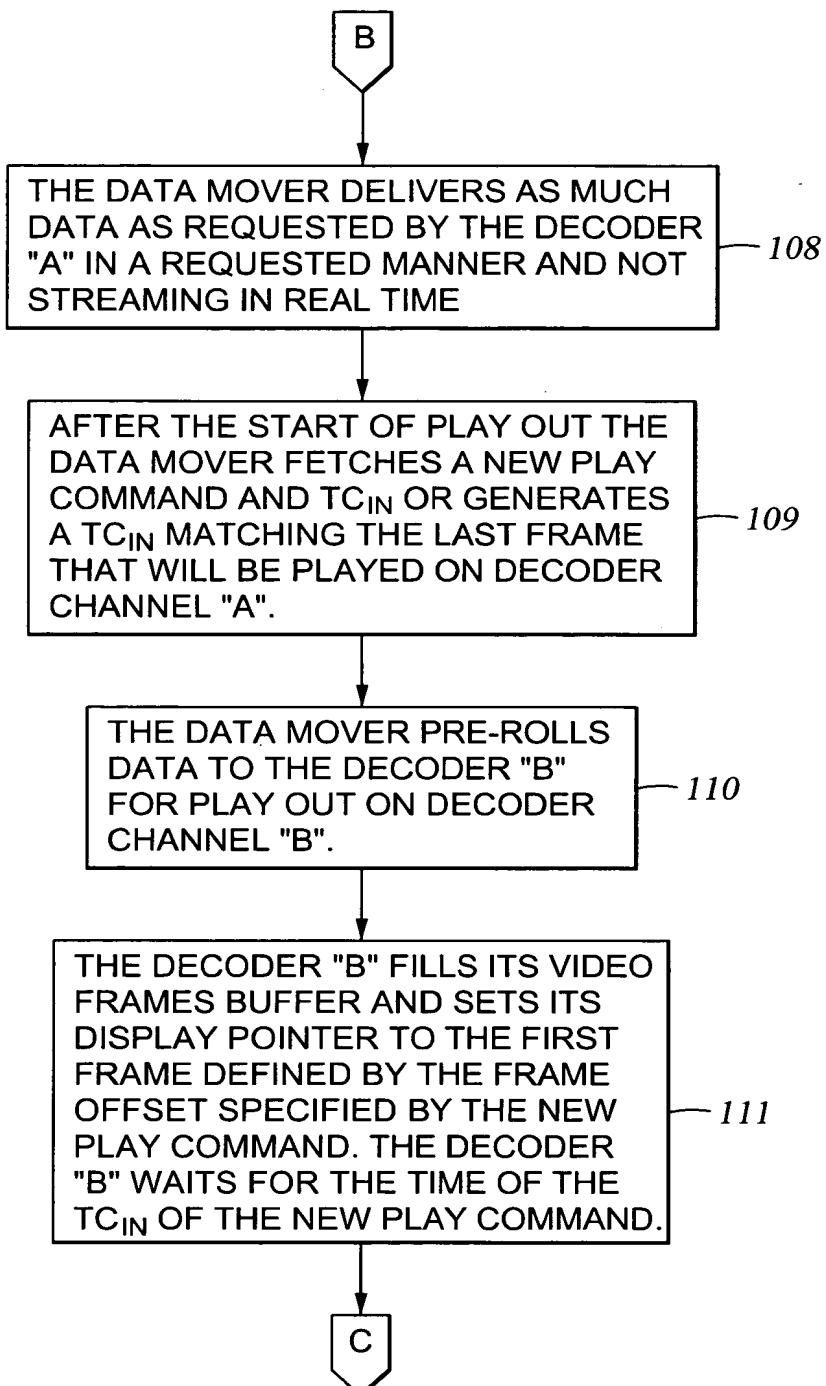


Fig. 11

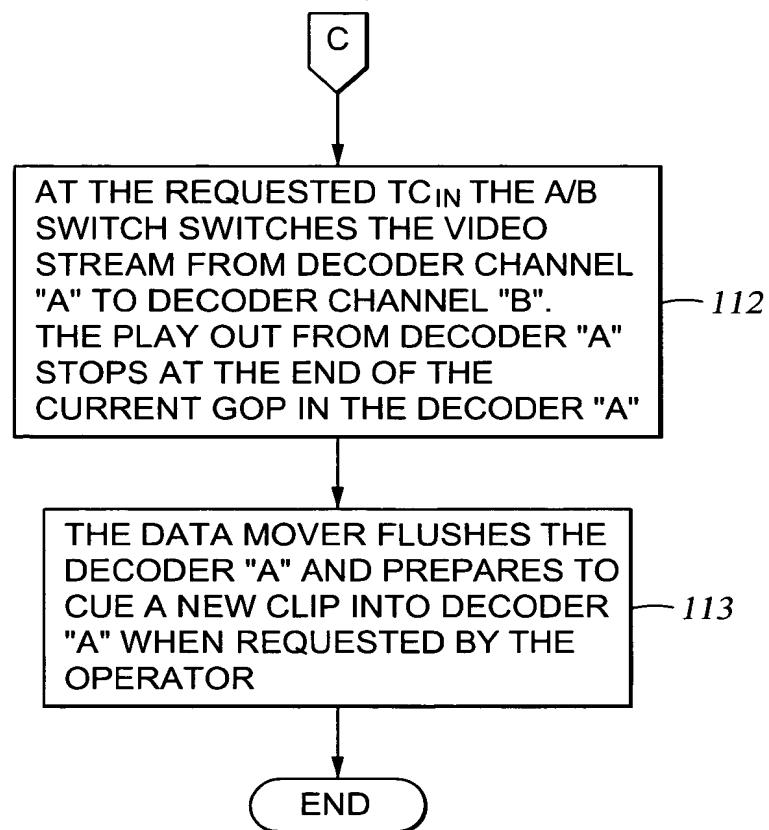


Fig. 12

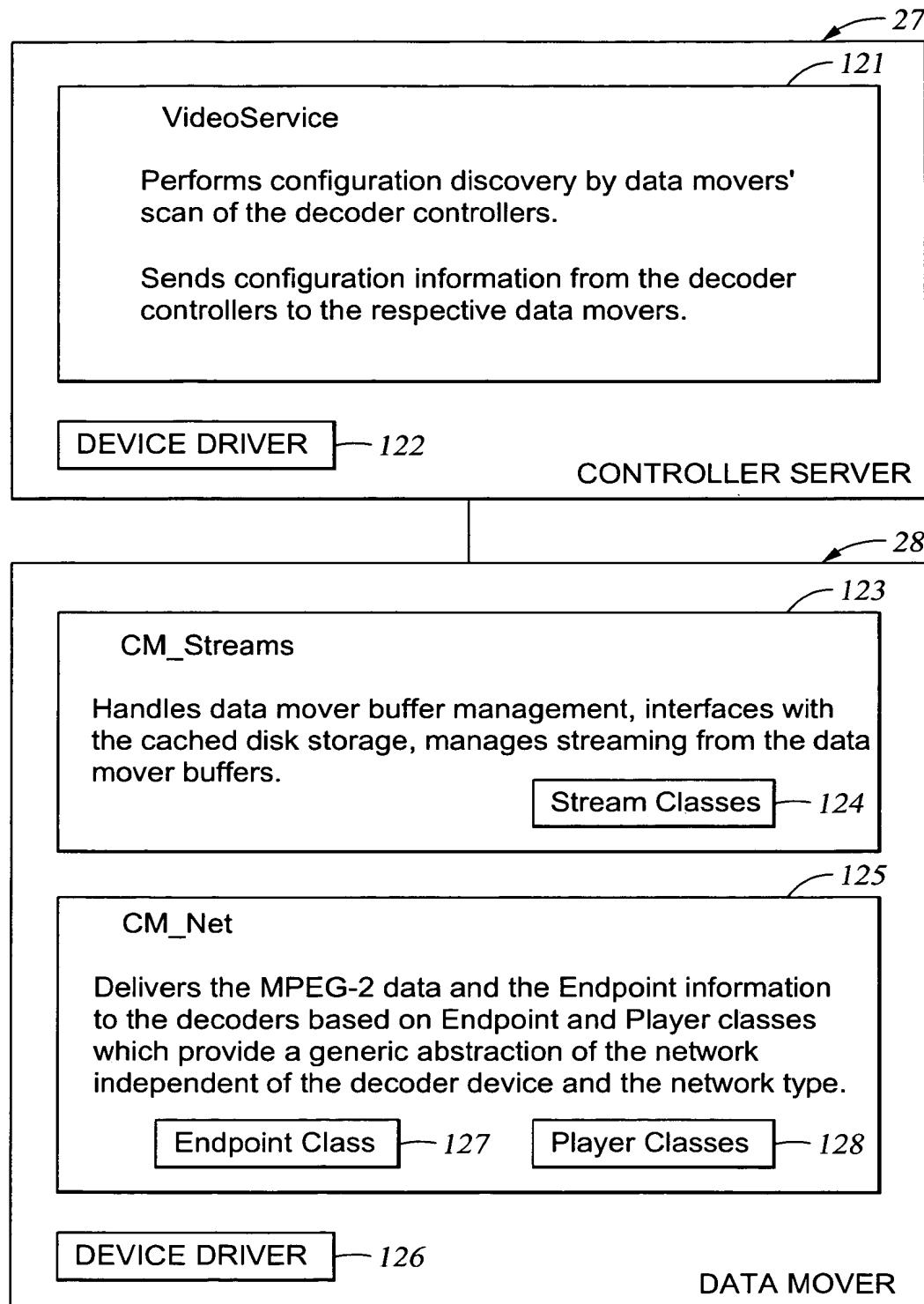


Fig. 13

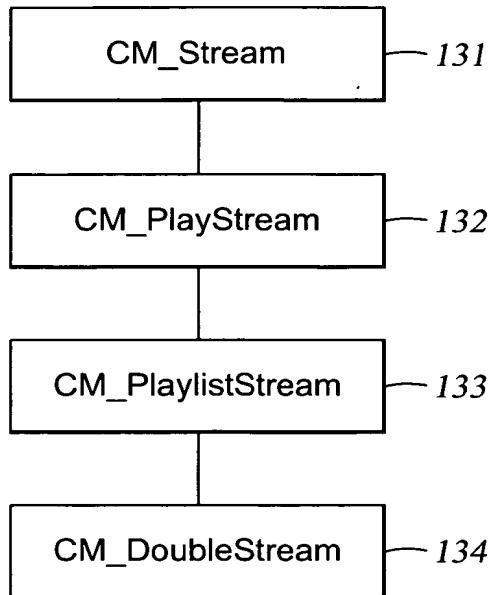


Fig. 14

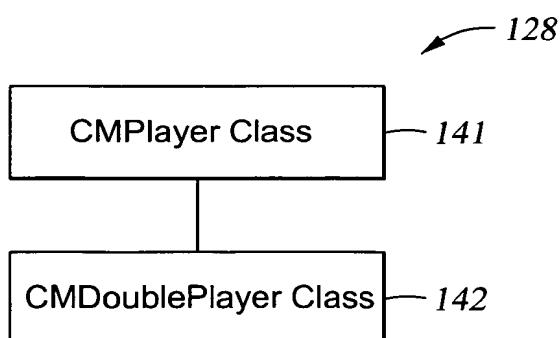


Fig. 15

Control Protocol	
<u>Configuration.</u> Allows the data mover to determine the configuration of the decoder array and set up any configuration parameters. Commands: QueryStatus, Configure	
<u>Streaming.</u> Controls delivery of streams (i.e., timing, clips, transition type). Commands: PrerollClip, ModifyDisplayTime, CancelClipPreroll, PauseClip, ResumeClip, ModifyClip.	
<u>Asynchronous status reports.</u> Asynchronous reports of significant events from the decoder array to the data mover. Commands: ClipHasStarted, ClipHasEnded, ClipIsEnding, TrapMessage, EditSummary.	
<u>Edit.</u> Allows all decoders in the decoder array to be controlled by an edit review station. Commands: Jog forward/backward, Shuttle forward/backward, Stop, Goto a specific timecode, and normal Play.	

Fig. 16

Format of Streaming Protocol Ethernet Packet

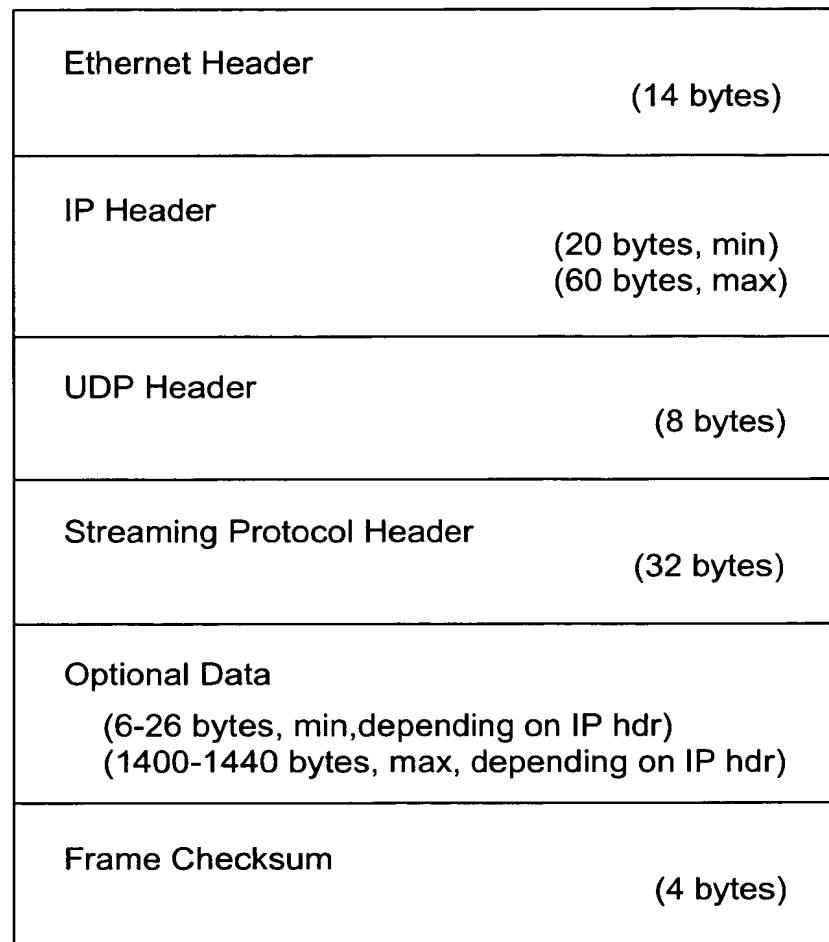


Fig. 17

Request Message Header Format

Request message number
Clip ID Number
Sequence Number
byte offset
window size
state
Reserved
speed
RESERVED
RESERVED
RESERVED

Fig. 18

Data Message Header Format

Data message number
Clip ID Number
Sequence Number
offset
0x00 0x00 data length
flags
RESERVED
RESERVED
RESERVED

Fig. 19

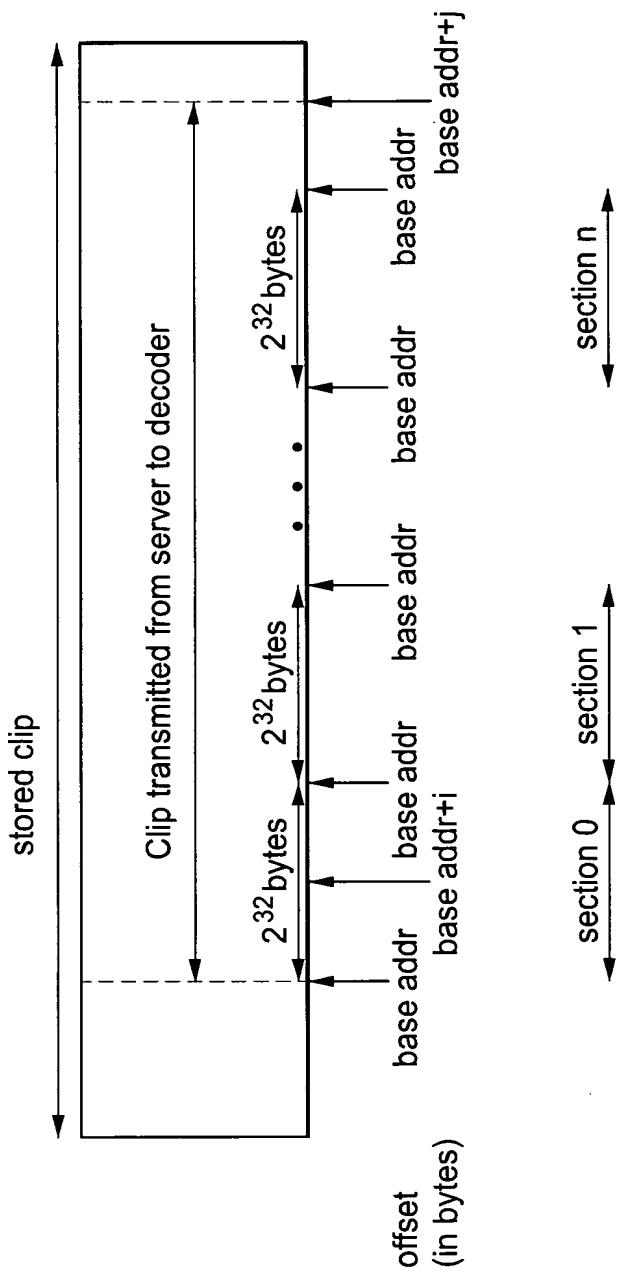
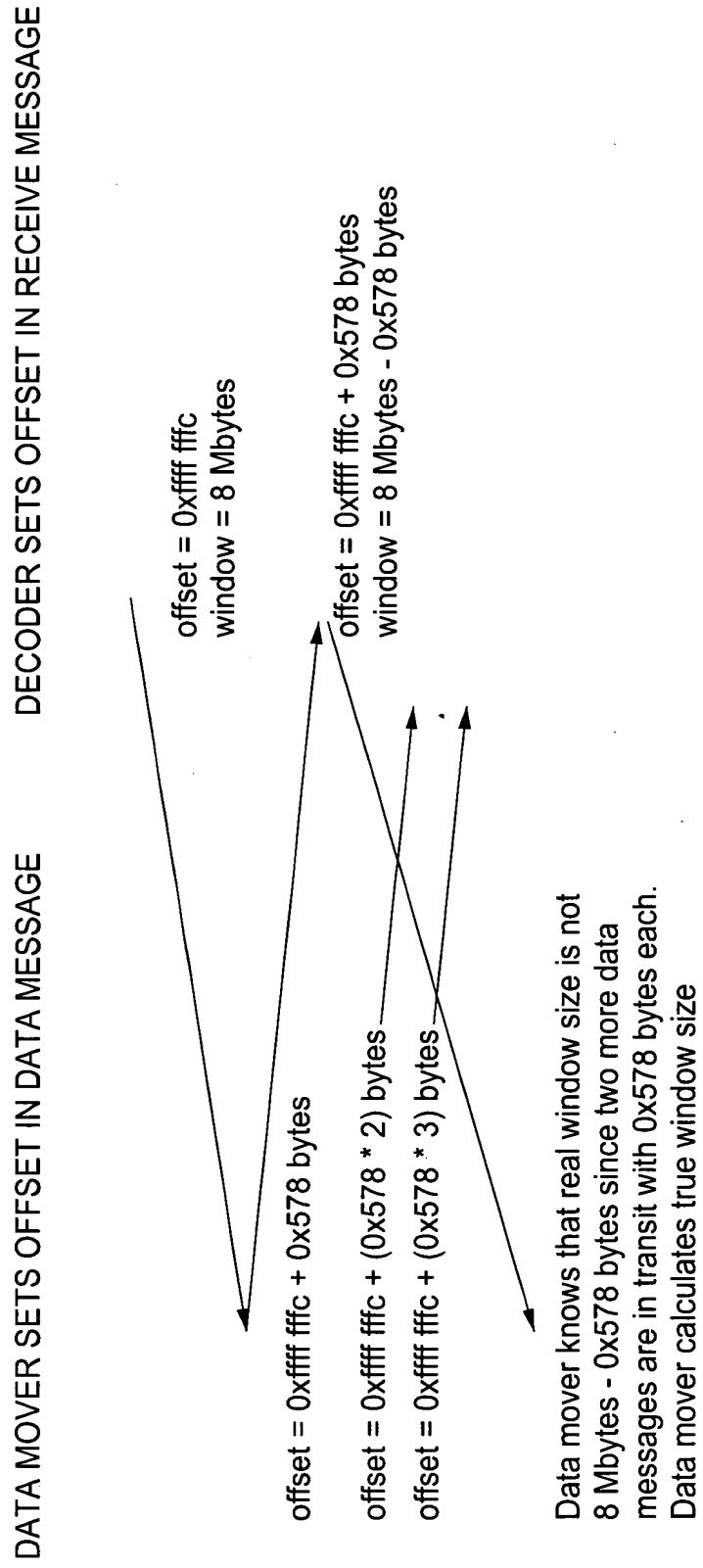


Fig. 20

Fig. 21



Data mover knows that real window size is not
8 Mbytes - 0x578 bytes since two more data
messages are in transit with 0x578 bytes each.
Data mover calculates true window size

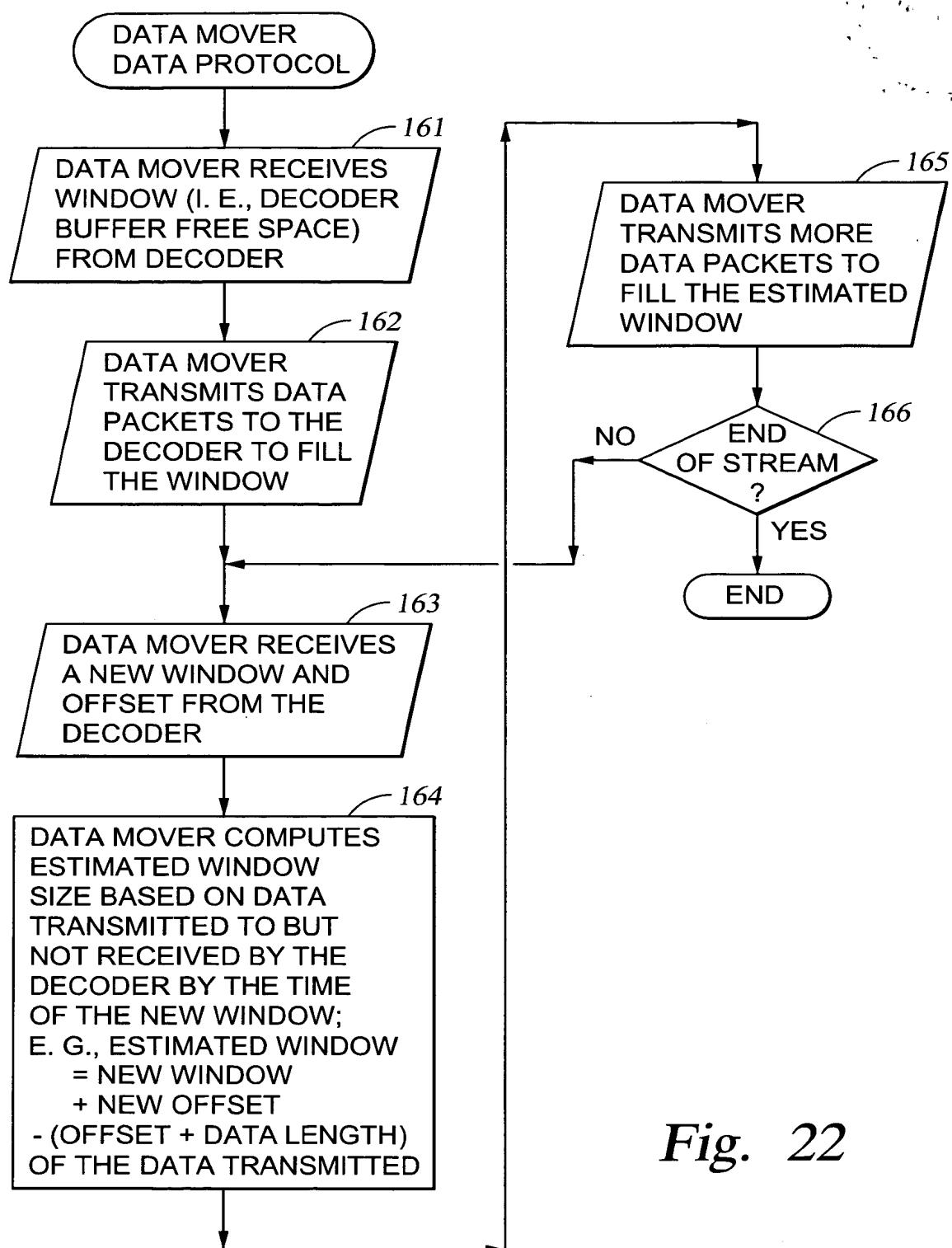


Fig. 22

DATA MOVER SETS OFFSET IN DATA MESSAGE

DECODER SETS OFFSET IN RECEIVE MESSAGE

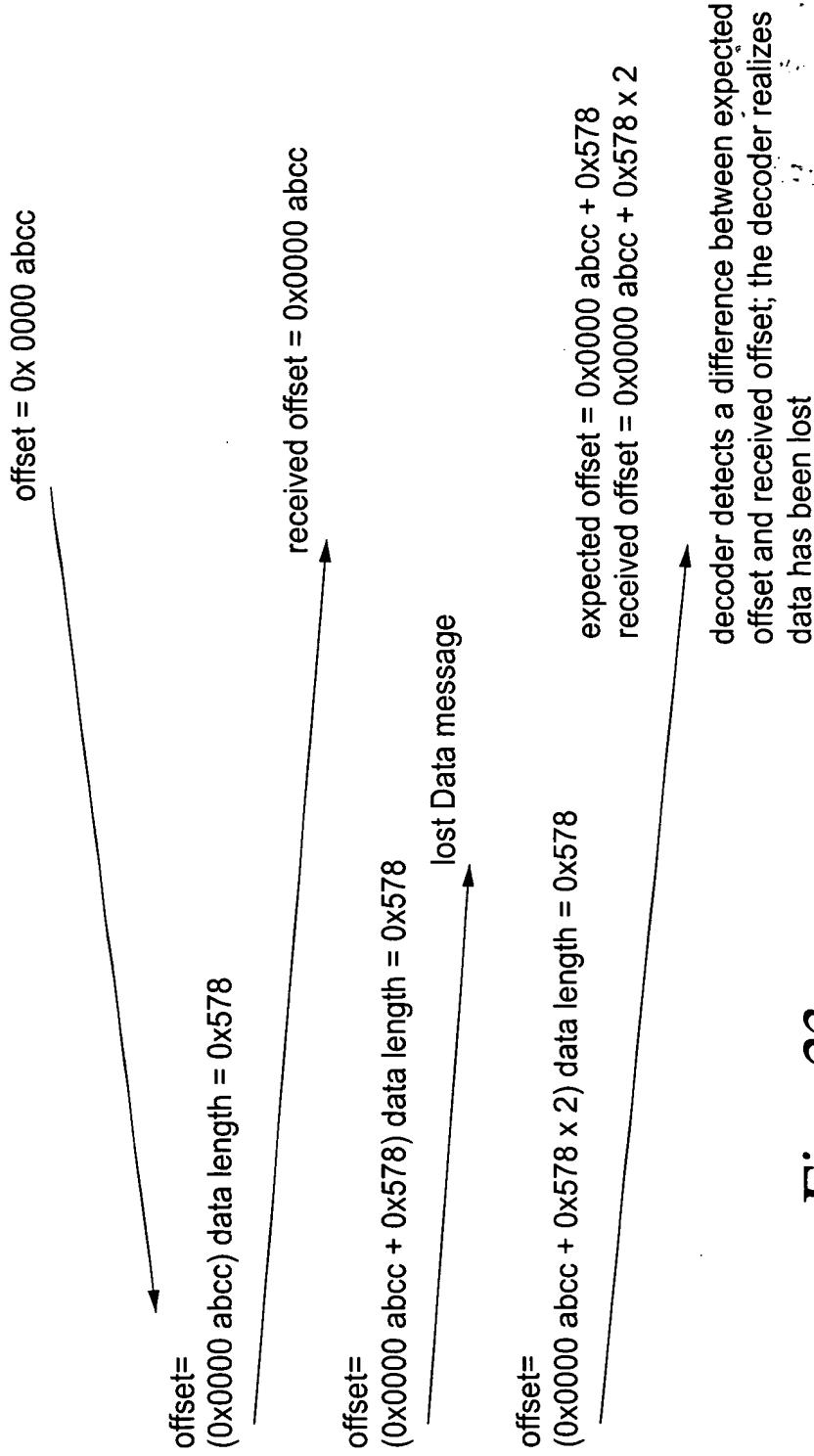


Fig. 23

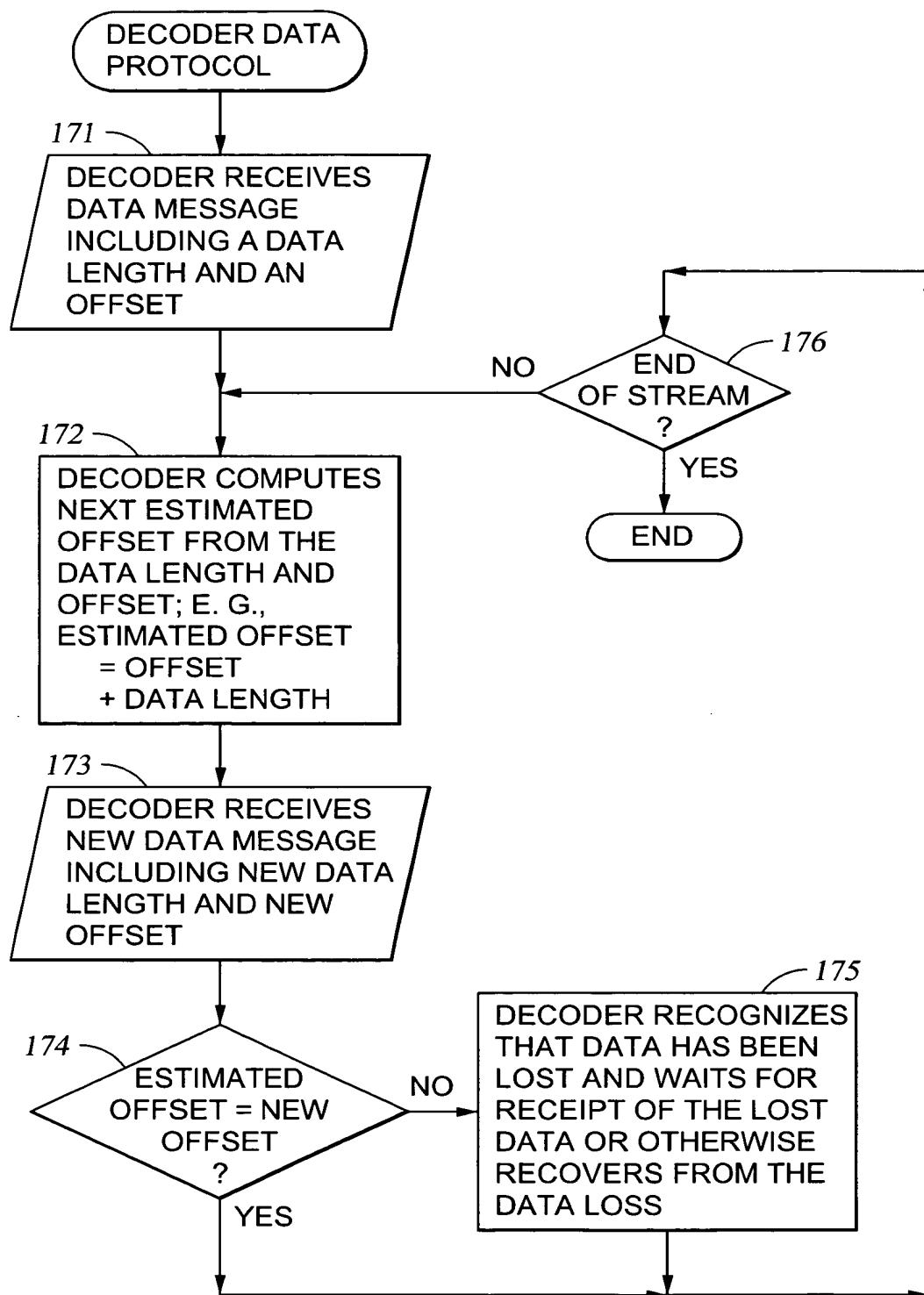


Fig. 24

Definition of Streaming States

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Streaming State	Definition
Cueing	Data mover sends data to the decoder, at least up to the time code that must be displayed. The data rate can be at a rate convenient for the data mover. The decoder consumes the data at 1 x real time. It is not important if the decoder underflows, since the underflow would be before the display time.
Streaming	The data mover sends data to the decoder at 1 x real time and the decoder consumes the data at 1 x real time; the decoder can underflow/overflow and it will affect the picture presented to the viewer.
Stopped	The decoder is not consuming data. During this state, the decoder continues to send Request messages at the configured Request interval.
non-overlapped	This state requires that the decoder send a new Request message only after receiving a response from the previous Request message. The data mover may use this mode for testing.

Fig. 25

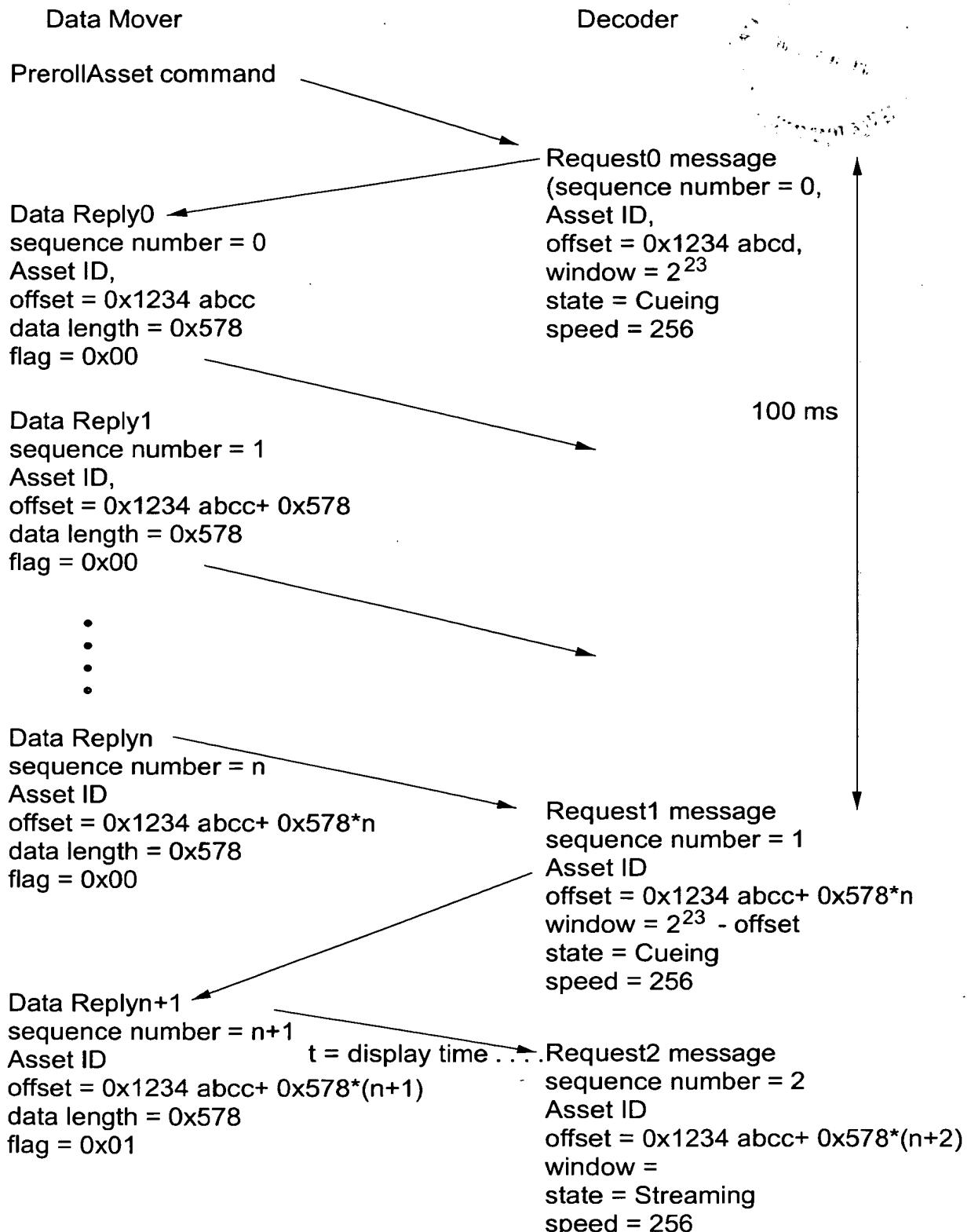


Fig. 26